Evidence-Based on Meta-Analysis of Internal Studies on the Causes of Stock Price Crash Risk at the Tehran Stock Exchange[1]

Maryam Dehghan Monkaabadi[2], Abdolmajid Abdolbaghi Ataabadi[3], Majid Ameri[4]

INTRODUCTION

The stock price crash risk is considered to be one of the challenging factors in the capital market, which is affected by several fundamental and behavioral factors. With the increase in the stock price crash risk, investors become pessimistic about investing in the stock exchange which leads to the withdrawal of their capital from the stock exchange market. Therefore, according to the major concerns of investors about the phenomenon, by knowing the causes of this phenomenon, solutions can be provided to prevent its occurrence. One of the causes of the stock price crash risk is the desire of managers not to publish unfavorable information, corporate diversification strategy with an emphasis on agency costs, smoothing profits, lack of social trust, free cash flow and information asymmetry, life cycle, and other factors [Hamdi and Qoma (2018), Bradran (2017), and Taghizadeh (2017)]. Therefore, due to the importance of the stability of the capital market and its role in the confidence of investors, identifying the causes of the stock price crash risk from the perspective of local studies and adopting measures that can be taken by investors and trustees is important. Therefore, the questions that rise in this context can be characterized as follow: what are the factors affecting the stock price crash risk? And what is the intensity and type of effect of these factors?

1. DOI: 10.22051/JFM.2022.39534.2652

2. M. Sc. Student, Department of Management and Business, Faculty of Industrial Engineering and Management, Shahrood University of Technology, Shahrood, Iran. Email:maryam.dehghan73@yahoo.com.

3. Assistant Professor, Department of Management, Faculty of Industrial Engineering and Management, Shahrood University of Technology, Shahrood, Iran. Corresponding Author. Email:abdolbaghi@shahroodut.ac.ir.

4. Department of Accounting, Faculty of Industrial Engineering and Management, Shahrood University of Technology, Shahrood, Iran. Email:mfbazad1357@yahoo.com.

MATERIALS AND METHODS

This research is a type of comprehensive meta-analytical study, which is based on accessible articles, theses, and domestic studies conducted regarding the identification of factors affecting the stock price crash risk, and it describes the results of past studies. The statistical sample is derived from the results of 57 internal studies based on the meta-analytic approach. Studies whose dependent variable is one of the variables of "negative skewness of stock returns (NS_{kt}= - [n (n − 1)$^{\frac{3}{2}}$ $\sum W_{kt}^3$] / [(n-1)(n-2)($\sum W_{kt}^2$)$^{\frac{3}{2}}$])," down to up volatility ($DUVOL_{k,t} = -Log((n_u - 1)\sum_{DOWN} W_{k,t}^2 /(n_d - 1)\sum_{UP} W_{k,t}^2))$, and "maximum sigma" (EXTR-SIGMA= $-Min \left[\frac{W-\overline{W}}{\sigma_W}\right]$)[1], selected and other articles due to the small number of studies and the insufficiency of the sample in order to estimate the effect of size, from the statistical population of the research were deleted.

Table 1. Sample

EXTR-SIGMA		$DUVOL_{k,t}$		NS_{kt}		
article	Thesis	article	Thesis	article	Thesis	
2	4	11	8	22	10	number

Statistical methods

The effect size shows the findings and results of many types of research in the form of an effective numerical scale, and the calculation of the effect size should be comparable among many studies (Kulik, 2003). In order to combine the findings of the studies to apply meta-analysis, the test statistics should be converted into effect size. In this research, the relation (1) is used in view of the effect size (**r;** is the effect size, t; is the Test statistics, N; is the number of studies and df; is the degree of freedom).

Equation 1

$$r= \sqrt{\frac{t^2}{t^2+(N-2)}}$$
$$t = \frac{r\sqrt{df}}{\sqrt{1-r^2}}$$

Meta-Analytic Models

To combine the effect sizes in the meta-analysis, one of the two models "random effects" and "fixed effects" is used. The assumption in the fixed effect model is to use the true effect size for the empirical studies, and the differences in the true effect size are due to sampling error. Unlike fixed effects models, random effects model is a scattered set of effect sizes (Homan, 2007).

RESULTS AND DISCUSSION

Statistical test based on negative skewness: the results of the test show a positive and significant effect of the standard deviation of the monthly return, Overvaluation of

---

1. $W_{k,t}$: Monthly return stock, n_u The number of months with high volatility and n_d the number of months with low volatility

equity, free cash flow, and information asymmetry. On the other hand, the results of the tests show the negative and significant influence of the effectiveness of internal controls, auditor expertise, ownership concentration, debt maturity, dividend, conservative and social trust.

Statistical test based on down-to-up volatility: The test results show a negative and significant influence of business strategy variables.

Statistical test based on maximalist Sigma: the results of the test show a positive and significant effect of growth opportunity and discretionary accruals and a negative effect of m/b and size.

CONCLUSION

One of the concerns of investors is the sudden drop in stock prices due to the negative expectations of investors and its rapid impact on the financial markets. According to the results of internal research related to stock price crash risk and different methods of measurement, in this research, the results were summarized to determine the effective causes based on the meta-analysis approach. Therefore, the results related to internal studies showed that information asymmetry, the standard deviation of monthly returns, overvaluation, free cash flows and heterogeneity of investors, growth opportunities, accrual items, and company size cause the stock price crash risk.

Other findings showed that factors such as dividends, auditor expertise, the effectiveness of internal controls, debt maturity, social trust, conservatism, and concentration of ownership are among the factors that reduce the stock price crash risk on the other hand the defensive strategy, m/b has a negative effect on the stock price crash risk.

Due to the wide range of results and contradictory results in the context of stock price crash risk, the most important limitation of such research is the econometric methods and the measurement of its variables, which made it impossible to use the results of some studies.

Keywords: Down to Up Volatility; Maximum Sigma; Meta-Analysis; Stock Price Crash Risk; Negative Skewness of Stock Returns.

JEL Classification: C9, G01, G32.

Reference

Baradaran Hassanzadeh, R., Taghizadeh Khanqah, V. (2018). The effect of corporate diversification strategy on stock price crash risk with emphasis on agency costs. Knowledge of Accounting, 9(1), 63-90. (In Persian)

Homan, H.A. (2010). A practical guide to meta-analysis in scientific research, Tehran. (In Persian)

Kulik, J. (2003). Effects of Using Instructional Technology in Elementary and Secondary Schools: What Controlled Ecaluation Studies Say.

Ben-Nasr, H, Ghouma, H; (2018). Employee Welfare and Stock Price Crash Risk. Journal of Corporate Finance, 48:700–725.

Taghizadeh Khanqah, V; Badavar Nahandi, Y. (2018). The relationship between investment efficiency and stock price crash risk with emphasis on information asymmetry. Journal of Fiscal and Economic Policies. 6(21), 33-56. (In Persian)